

# JOURNAL

OF THE

## ASIATIC SOCIETY OF BENGAL.

---

### Part II.—PHYSICAL SCIENCE.

---

No. I.—1879.

---

I.—*On new species of the Genus Plectopylis of the Family Helicidæ.*—By  
LIEUT.-COLONEL GODWIN-AUSTEN, F. R. G. S., F. Z. S., &c., late  
Deputy Superintendent Topographical Survey of India.

(Received October 7th, 1878;—Read March 5th, 1879.)

(With Plate I.)

Since the paper on the shells of this group of *Helices* was published in the Proceedings of the Zoological Society of London, Nov. 17th, 1874, I have had the good fortune to obtain three new species, one from Tenasserim, among a collection of shells made by Mr. O. Limborg, of which a list is being prepared; the other two are from Eastern Assam. I give a plate, drawn with the aid of the *camera lucida*, shewing enlarged the arrangement of the internal *plicæ*, which differ materially from all those I have as yet examined and figured; these differences form the best of characters by which the species may be determined. Some conchologists may be inclined to doubt the persistence of these internal characters; personal observation is, however, the best means of settling such a point. Having a very large number of *P. brachydiscus*, described below, I set to work and broke open 42 specimens without finding the very slightest variation; of *P. brahma* thirteen were examined with the same result; there is some slight variation in the young, but only in so far that the barriers shew an undeveloped state, the general arrangement being the same. In *P. achatina*, I found perfect similarity in some 12 specimens, and the result has been similar in all other species that I have examined. I think we may therefore feel certain that such internal structures, depending as they do on the form of the

animal, its mantle and secreting organs, will be as persistent as the shell itself, and that their form and relative positions being more complicated and more pronounced than mere outward shape, any divergence in the former is of importance and more noticeable and noteworthy in a specific sense. The animal, I am sorry to say, I have never had an opportunity of examining very closely.

*P. shanensis*, Stoliczka, (J. A. S. B., 1873, p. 170,) overlooked in my first paper, is I find, the same as *P. trilamellaris*, which I described in the P. Z. S., Jany. 1874, from Burmah; so this last title will not stand. Ferd. Stoliczka's fine collection of shells passed to the Indian Museum, and Mr. G. Nevill compared the two shells and settled their identity. It should be placed after No. 12, *perarcta*.

***Helix (Plectopylis) brachydiscus*, n. sp. Plate I, fig. 1.**

Shell dextral, umbilicus very open and shallow, very discoid, rather strong, dull umber-brown, epidermis thick with a cloth-like texture, finely and beautifully ribbed longitudinally; in young fresh shells the upper outer margin is closely set with a strong regular epidermal fringe about .075 inches long. Spire quite flat, approaching the concave in some specimens, the apex itself having a subpapillate form. Whorls 7, the last rather flat on the side and angular above, descending at the aperture, which is very oblique and oblate. Peristome strongly reflected, thickened, white, the margins connected by a well raised ridge, notched above and below. A long horizontal lamella is given off from the upper middle portion of this towards the vertical parietal lamina, but only extends for 0.20 inches, then terminates, but at .15 inches is again developed, becoming thicker and higher as it approaches the vertical lamina and ending just short of it, in this respect being similar to *P. perarcta*.

The parietal vertical lamina is pointed above and gives off from the lower basal end a short lamella towards the aperture, and a very slight short thin, free lamina is to be seen just below the vertical barriers. Palatal teeth simple, six, the 2nd, 3rd, 4th and 5th, are the best developed, the 1st and last are small, 2nd the longest.

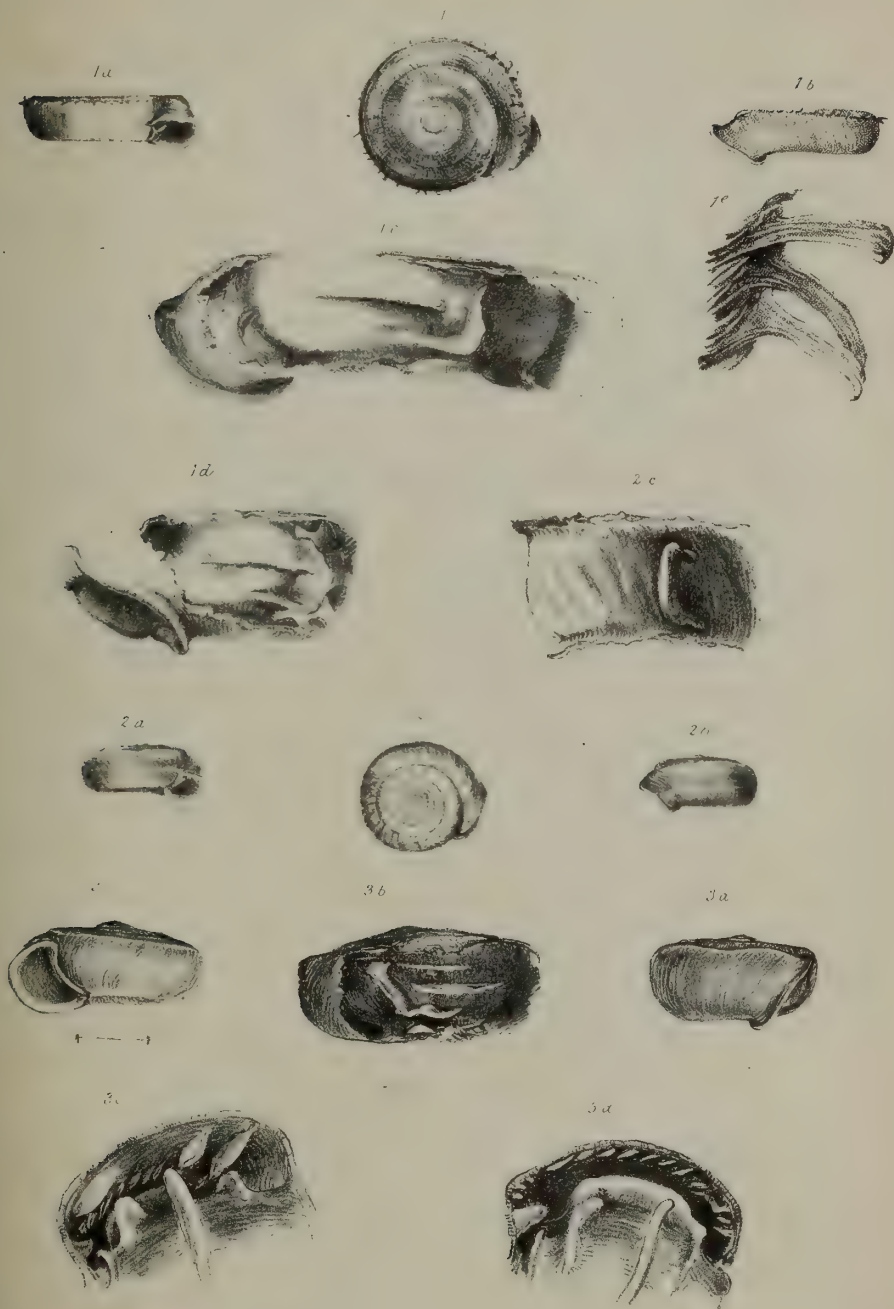
Animal not observed.

The measurements of the specimen drawn and of the largest specimen are respectively—

Major diam. 0.82. Minor diam. 0.68. Alt. at axis about 0.24 and

" " 0.95. " " 0.83. " " " 0.28.

HAB.—This shell was found by Mr. O. Limborg on the high range of Mulé-it, east of Moulmein, Tenasserim, and in the neighbourhood. He collected an immense number in a dead bleached state, but only a dozen in a fresh state; the others were, however, exceedingly valuable for proving, as above shewn, the persistency of the internal structure in all.



G. Godwin-Austen del et lith.

Maclure & Macdonald Imp

NEW SPECIES OF PLECTOPYLIS.  
TENASSERIM AND ASSAM.

This form should be placed between No. 11, *P. pseudophis*, and No. 12, *perarcta* in my key to the species, *vide* P. Z. S., 1874, pp. 612, 613.

**Helix (*Plectopylis*) *Oglei*, n. sp., Plate I, fig. 2.**

Shell dextral, widely umbilicated, sub-discoid, dull pale brown with close-set sienna markings crossing the whorls. Epidermis thick and nacreous, and somewhat rough. Apex flat but slightly concave, the whorls rising regularly. Whorls 8, the last descends slightly near the aperture, which is very oblique and ovate. Peristome slightly reflected, white, continuous on the body whorl, but not strongly developed. Palatal teeth 6, 3rd, 4th and 5th equal, 6th longer, double. On the parietal side is one single vertical lamina with buttress-like supports on posterior side above and below.

Major diameter 0.65 ; minor diam. 0.58 ; alt. axis 0.25 inches.

HAB.—The above shell was discovered near Sadiya, Assam, by Mr. M. T. Ogle of the Topographical Survey, after whom I have much pleasure in naming it. Mr. Ogle collected and sent me a very fine collection of land-shells from this eastern part of the Assam valley, comprising many new and interesting species, which I am engaged in working out. The nearest species to *P. oglei* is *serica* of the Burrail Range, but the former is very much larger and may be known at once by its less flattened form and darker rougher surface. In the synoptical table of this sub-genus, P. Z. S., 1874, p. 612, this shell should follow No. 1, *P. serica*, G.-A.

**Helix (*Plectopylis*) *brahma*, n. sp., Plate I, fig. 3.**

Shell sinistral, rather closely umbilicated, discoidal, pale ochry-brown, finely and regularly striate. Apex flat yet slightly convex. Whorls 7, last angular above and rounded below, slightly compressed behind the aperture and hardly descending. Aperture lunate, oblique. Peristome slightly reflected and thickened, white, continued as a callus on the body whorl.

Internal structure complicated ; the parietal vertical lamina is strong and gives off a short horizontal lamella at the lower end ; above this are two other and parallel *free* lamellæ,\* both short, the lower being the best developed ; the upper is occasionally united to the upper end of the vertical barrier. There is a very thin thread-like lower free lamella extending to the peristome and uniting with the parietal callus. The palatal *plicæ* are arranged in two rows, those of the anterior row are few and large, four in

\* In three cases out of twelve I examined, the upper *lamella* was united to the vertical barrier, but this does not affect the order of position and arrangement of all these processes in this species.



number, the two upper long, narrow and adjacent, the 3rd is a flattened dome-like mass, the 4th is long and curving inwards. Behind this at a short distance is the second row, consisting of fourteen very minute, closely arranged, thin, longer or shorter tooth-like processes, those on the upper side being slightly the largest.

Major diam. 0·35; minor diam. 0·32; alt. axis 0·2 inches.

HAB.—This very interesting new form was also obtained by Mr. Ogle near Brahmakhund, eastern Assam, at 1,000 feet elevation.

The arrangement of the internal barriers is unlike any species of this sub-genus I have yet examined, and shews a decided departure from the usual North-East Frontier forms, a sort of foreshadow that in the mountains further east this particular development is to be found of a like or more marked character.

In external form the present species resembles *P. shiroiensis*, but may be distinguished from it by the coarser epidermis and more regular striation, and the broader wider size of the last whorl near the aperture, shewing no constriction. It is of interest to note that the flattened dome-like barrier on the palatal or mantle side coincides with the vertical barrier in *P. shiroiensis* where we see the distinct result of two teeth fused as it were together.

This species should come in after No. 18, *P. refuga*, var. *dextrorsa*, as a sub-section *b'* of group B of the key in P. Z. S. Palatal vertical *pliae* only compound, in two rows, numerous. Horizontal parietal *laminæ* short.

---

II.—*On the Operations for obtaining the Discharges of the large Rivers in Upper Assam, during Season 1877-78.*—By LIEUT. H. J. HARMAN, R. E., in charge Assam Valley Series, Survey of India. Communicated by MAJOR-GENL. J. T. WALKER, R. E., C. B., F. R. S., Surveyor General of India.

[One of the Survey Operations during the field season of 1877-78 was to explore as much as possible of the region between the Subansiri and the Dihang Rivers, with a view to ascertaining which of these two affluents of the Brahmaputra river had the best claim to be considered the recipient of the Sanpo River of Thibet. As there was reason to fear that political difficulties might intervene to prevent the survey officers from proceeding a sufficient distance into the interior to settle this disputed point, Lieut. Harman was directed to measure the discharges of the several rivers at various points, and to ascertain the volume of water in each river in order that additional evidence might be forthcoming on an interesting geographical problem. The following paper gives the details of these operations.

J. T. W.]